

Serial No. 09/863,135

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1. (Currently Amended) A method of delivering a fluid to the heart of a patient, the heart having a coronary vasculature, comprising the steps of:
 - a) introducing at least one distal end of at least one perfusion catheter into a peripheral artery of said patient;
 - b) advancing the said distal end of the said perfusion catheter from the said peripheral artery into at least one coronary ostium communicating with the said coronary vasculature of the said patient;
 - c) occluding the said coronary ostium with an occlusion device;
 - d) delivering a fluid to the heart through the perfusion catheter infusing a cardioplegic agent through a lumen of the perfusion catheter into the coronary vasculature downstream of the occlusion device.
2. (Cancelled)
3. (Currently Amended) A method of delivering a fluid to the heart of a patient, the heart having a coronary vasculature, comprising the steps of: The method of claim 1 wherein said introducing at least one distal end of at least one perfusion catheter into a peripheral artery of the patient;
advancing the distal end of the perfusion catheter from the peripheral artery into at least one coronary ostium communicating with the coronary vasculature of the patient;
occluding the coronary ostium with an occlusion device; and
delivering a fluid to the heart through a lumen of the perfusion catheter fluid is infused through said lumen of said perfusion catheter at a rate of at least approximately 100 ml/min at a pump pressure not exceeding 350 mmHg.
4. (Currently Amended) A method of delivering a fluid to the heart of a patient, the heart having a coronary vasculature, comprising the steps of: The method of claim 1, wherein step d) comprises the substep of
introducing at least one distal end of at least one perfusion catheter into a peripheral artery of the patient;

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advancing the distal end of the perfusion catheter from the peripheral artery into at least one coronary ostium communicating with the coronary vasculature of the patient;
occluding the coronary ostium with an occlusion device; and
infusing a mixture of oxygenated blood and a cardioplegic agent to the heart to create the fluid and then delivering the fluid through a lumen of said the perfusion catheter into said the coronary vasculature downstream of said the occlusion device at a rate of at least approximately 100 ml/min at a pump pressure not exceeding 350 mmHg.

5. (Currently Amended) The method of claim 1, further comprising the step of:
e) isolating said the coronary vasculature from systemic circulation of said the patient by continuing to occlude said the coronary ostium with said the occlusion device for a period of time after delivering the fluid.

6. (Currently Amended) A method of delivering a fluid to the heart of a patient, the heart having a coronary vasculature, comprising the steps of: The method of claim 1, further comprising the step of:

introducing at least one distal end of at least one perfusion catheter into a peripheral artery of the patient;
advancing the distal end of the perfusion catheter from the peripheral artery into at least one coronary ostium communicating with the coronary vasculature of the patient;
occluding the coronary ostium with an occlusion device;
delivering a fluid to the heart through a lumen of the perfusion catheter; and
f) maintaining systemic circulation of said the patient with peripheral cardiopulmonary bypass.

7. (Currently Amended) The method of claim 6, wherein the maintaining step f) comprises:

positioning an arterial cannula in a peripheral artery of said the patient;
positioning a venous cannula in a peripheral vein of said the patient;
withdrawing venous blood from said the patient through a blood flow lumen in said the venous cannula; and

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infusing oxygenated blood into saidthe patient through an infusion lumen in saidthe arterial cannula.

8. (Currently Amended) A method of delivering a fluid to the heart of a patient, the heart having a coronary vasculature, comprising the steps of: The method of claim 1, further comprising the steps of:

introducing at least one distal end of at least one perfusion catheter into a peripheral artery of the patient;

advancing the distal end of the perfusion catheter from the peripheral artery into at least one coronary ostium communicating with the coronary vasculature of the patient;

occluding the coronary ostium with an occlusion device;

delivering a fluid to the heart through a lumen of the perfusion catheter;

g) introducing a second distal end of saidthe perfusion catheter through an aortic valve of saidthe heart of saidthe patient; and

h) venting a left ventricle of saidthe heart by withdrawing fluid through a venting lumen communicating with saidthe second distal end of saidthe perfusion catheter.

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9. (Currently Amended) A method of delivering a fluid to the heart of a patient, the heart having a coronary vasculature, comprising the steps of: The method of claim 1, wherein step a)

comprises introducing a single perfusion catheter having at least two distal ends into saidthe peripheral artery of saidthe patient;

step b) comprises advancing saidthe at least two distal ends into at least two coronary ostia;

step c) comprises occluding each of saidthe at least two coronary ostia with an occlusion device proximate each of saidthe at least two distal ends, respectively; and

step d) comprises delivering a the fluid through at least one lumen communicating with saidthe at least two distal ends of saidthe perfusion catheter into saidthe coronary vasculature downstream of saidthe occlusion devices.

10. (Currently Amended) The method of claim 9, further comprising the steps of:

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g) introducing a third distal end of said the perfusion catheter through an aortic valve of said the heart of said the patient;

h) venting a left ventricle of said the heart by withdrawing fluid through a venting lumen communicating with said the third distal end of said the catheter.

11. (Currently Amended) The method of claim 21, wherein step a) comprises introducing the distal ends of at least two perfusion catheters into said peripheral artery of said patient; step b) comprises advancing said distal ends of said at least two perfusion catheters into at least two coronary ostia; step c) comprises occluding each of said at least two coronary ostia with an occlusion device proximate each of said distal ends of said at least two perfusion catheters, respectively; and step d) comprises the delivering step comprises delivering the fluid through at least two lumina communicating with said the distal ends of said the at least two perfusion catheters, respectively, into said the coronary vasculature downstream of said the at least two occlusion devices.

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12. (Currently Amended) The method of claim 11, further comprising the steps of:

g) introducing a distal end of a venting catheter through an aortic valve of said the heart of said the patient; and

h) venting a left ventricle of said the heart by withdrawing fluid through a venting lumen communicating with said the distal end of said the venting catheter.

13. (Currently Amended) The method of claim 1, wherein the occluding step e) comprises inflating an inflatable occlusion device to occlude said the coronary ostium.

14. (Currently Amended) The method of claim 1, wherein the introducing step a) comprises the substeps steps of:

introducing a guide catheter having at least one internal lumen into said the peripheral artery of said the patient; and

introducing said the at least one distal end of said the at least one perfusion catheter through said the at least one internal lumen of said the guide catheter.

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15. (Currently Amended) The method of claim 11, wherein the introducing step a) comprises the steps substeps of:

introducing a guide catheter having at least one internal lumen into saidthe peripheral artery of saidthe patient; and

introducing the distal ends of saidthe at least two perfusion catheters through saidthe at least one internal lumen of saidthe guide catheter.

16. (Currently Amended) The method of claim 11, wherein the introducing step a) comprises the steps substeps of:

introducing a guide catheter having at least two internal lumina into saidthe peripheral artery of saidthe patient; and

introducing the distal end of a first perfusion catheter through a first internal lumen in saidthe guide catheter, and introducing the distal end of a second perfusion catheter through a second internal lumen in saidthe guide catheter.

17. (Currently Amended) The method of claim 1, further comprising the step of:
i) performing coronary artery bypass graft surgery on the heart of the patient.

18-19. (Cancelled)

20. (Currently Amended) The method of claim 1, further comprising the steps of:

introducing a distal end of a venting catheter through an aortic valve of saidthe heart of saidthe patient and venting a left ventricle of saidthe heart by withdrawing fluid through a venting lumen communicating with the distal end of the venting catheter.